DOCUMENT RESUME

ED 262 450 CS 505 099

AUTHOR Hofland, John
TITLE Relating Right Brain Studies to the Design Process.
PUB DATE Aug 85
NOTE 15p.; Paper presented at the Annual Meeting of the American Theatre Association (Toronto, Ontario, Canada, August 4-7, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cerebral Dominance; *Cognitive Processes; *Creative Thinking; *Design Crafts; Higher Education; Models; Neurolinguistics; Speech Communication; *Stimulation; *Theater Arts; Visual Perception

ABSTRACT

Intended for teachers of theatrical design who need to describe a design process for their students, this paper begins by giving a brief overview of recent research that has described the different functions of the right and left cerebral hemispheres. It then notes that although the left hemisphere tends to dominate the right hemisphere, it is the right hemisphere that can do a better job of generating possible solutions to a design problem. Next, the paper describes conditions that free the right brain from left brain dominance and suggests a model to describe the method by which the right brain produces new ideas. Last of all, the paper describes three techniques that can be used to encourage right brain dominance in the generative step of the design process: random stimulation, lateral thinking, and synectics. (Author/HOD)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

John Hofland

ED262450

Abstract
for

# RELATING RIGHT BRAIN STUDIES TO THE DESIGN PROCESS

The paper should be especially useful for teachers of theatrical design who need to describe a design process for their student designers. It begins by giving a brief overview of recent research that has described the different functions of the right and left cerebral hemispheres. The paper goes on to note that although the left hemisphere tends to dominate the right hemisphere, it is the right hemiphere that can do a better job of generating possible solutions to a design problem. The right brain, however, cannot generate these solutions unless conditions exist that free it from left brain dominance. These conditions are described. The paper then suggests a model to describe the method by which the right brain produces new ideas. Last of all, several methods or encouraging right brain dominance in the generative step of the design process are outlined.

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

CS 505 099

PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

John A. Hofland

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC).

RELATING RIGHT BRAIN STUDIES TO THE DESIGN PROCESS

That our right and left cerebral hemipheres function in different fashions is hardly news any longer. We know, for example, that the right hemisphere is specialized in such things as:

understanding of metaphor,
spatial perception,
proper form in drawing,
intuitive thinking, and
simultaneous, spatial thought processes.

The left hemisphere, on the other hand, is specialized in:

verbal communication,
abstract categorization,
detail in drawing,
rational, logical, analytical thinking, and
sequential thought processes.

The discoveries have been shown to be significant in a number of ways (see, for example, Betty Edwards' Drawing from the Right Side of the Brain or Delgado's Acting with Both Sides of the Brain), and we should not neglect to notice how they might be useful in setting up a design process for theatrical designers.

Before we proceed to explain how designers could best take advantage of the knowldge we have of right and left brain functions, however, it might be helpful if we first understand a bit more about the relationship between the two cerebral hemispheres.

Between the two hemispheres is a band of neural fiber called the corpus callosum which permits an interchange of information between the hemispheres, and also serves as a regulator of this cross-over of information. Thus, when one hemisphere sends an impulse across the corpus callosum, the corpus callosum will block the neural impulses coming from the other hemisphere. Only the strongest command wins, so conflict between the two

hemispheres is avoided.

Furthermore, this also enables the corpus callosum to allow one hemisphere to maintain a dominance over the other.

Tim Gallwey, though he never refers to right-left psychology, nevertheless illustrates the phenomenon quite vividly when he describes how some players attempt to play the game of tennis or golf. He notes that after a bad shot, a battle ensues during which the player who made the bad shot gets angry and berates himself verbally. As we have shown, it is the left brain that does the talking. But to whom is it doing the talking? Apparently it is berating the spatially oriented right brain. Oddly, after such occasions, the playing only gets worse. The reason again seems obvious. The left brain has gained dominance, and, trying to play the game while it pushes the right brain aside, fails. The reason? The left brain is not suited for such a task, since it is not spatially oriented, does not think intuitively, and can only process information slowly by an analytical process.

This example from everyday life illustrates another discovery of right-brain studies. Not only does one hemisphere dominate the other, but also the dominant hemisphere is usually the left. Nevertheless, it is possible for the right brain to win control if it feels confident that it can find the answer, and if it can disengage the left brain from interfering in its activity.

What does this information have to do with the design process? It might be helpful to begin by describing what constitutes a typical design process and relating the steps of that process to the hemisphere that would likely be dominant in accomplishing that step. Briefly, the process may be divided

into the following three steps:

> The first step usually involves defining the problem, or in other words, becoming acquainted with the requirements of the script. This step is primarily a task of the left brain.
>
> In the second step we generate ideas that might serve as possible solutions. The second step requires right brain involvement.
>
> Once we have generated a number of possible solutions to our design problem, we proceed with the third step, evaluation. Here the designer tests the design against the research and guidelines he established in the first step, thereby validating the solution, or rejecting it and returning through the process. As with the first step, this step is primarily a task of the left brain.

Rather than to tend to the entire process, however, we will concentrate only on the second step of the process, the step wherein ideas are generated, since this is the step that most requires the use of right brain functions, and since, as we have noted earlier, it is the right brain that is most easily dominated and thereby rendered ineffective.

It might be helpful, first of all, to explain further why the right brain is more likely to be the idea generator in the design process. Our left brain, because it functions in an analytical fashion, is what might be called a self-maximizing system. In a self-maximizing system, information available at any moment is organized in the best possible way, the best way being the way that is most stable psychologically. As more information comes in, it is added to the existing arrangement. Finally, however, such a self-maximizing system finds a piece that will not fit. At this point a self-maximizing system of thought fails, for the only way the problem can be solved is for the arrangement to be taken apart and reorganized.

The difficulty with this left-brain system is that it depends on the sequence through which the information is obtained. It operates like a sort of mental landscape, according

to Edward de Bono, so that the first drop of information forms a depression and subsequent gully, forcing all subsequent information to flow in conformity with the pattern that has been set up by the first information. Thus, as subsequent rains deepen gullies in a rain-washed landscape, each new piece of information only serves to deepen the pattern set up by the initial input. Then, when some piece of information fails to flow with the pattern in which we are mentally entrenched, the self-maximizing system is left without recourse.

When the sequence in which the material arrives is less critical, or in other words, when the right brain is given opportunity to function more freely, the material can be "played" with to finally create a suitable solution.

Thus the self-maximizing left brain has several disadvantages when asked to think creatively. First of all, patterns tend to become established ever more rigidly. Once a certain pattern is perceived, anything resembling it seems to reinforce the pattern, thereby making fresh or alternative approaches and viewpoints increasingly difficult.

Secondly, as suggested earlier, the sequence of the arrival of information plays too important a role in the arrangement and use of that information; and furthermore, the continuity of the system means that a small divergence in an early step makes a huge difference later.

Lastly, such a system of thought forces us to polarize when given a choice between two positions, so that we tend to snap from one pattern to another, and rather than interrelating the choices to provide a solution better than either of the two options, we end up choosing one and ignoring the other. The right brain, on the other hand, since it is less concerned with

time and sequence, will tend to make a maximum use of all available information.

The strongest argument for the necessity of using the right brain in the design process, however, may be the relationship between imagery and thinking. The theatrical designer is not merely creating pictures to entertain the eye while the ear listens to ideas embodied in the actors' words. Rather the designer, as well as the actor, is communicating ideas. In fact, as Arnheim, in his book Visual Thinking suggests, the designer through his designs and the actor through his gestures, posture, and movement may be communicating ideas as important as those communicated through the actor's spoken words.

If we are not merely decorating a stage, but are, more importantly, communicating ideas, it is then highly important that we avoid contrived, cheap designs. First of all, contrived material is a result of a self-maximizing system that takes the first intellectualized idea available and uses it, at the exclusion of other available patterns. The visual representation of our thought is therefore not as strong as it could be. The thought is a product of the left brain, whose strength is not in visual thinking.

It seems apparent, then, that it is important that designers engage their right brain when they attempt to generate solutions to set design problems. What conditions are necessary for the right brain to escape the domination of the left brain as it sets out to generate ideas? First of all, it is more important to create enough ideas so that some can be wrong or unused than it is to create only good ideas. Therefore it is helpful in the generative stage to shift emphasis away from the validity of an idea. Instead the emphasis is on the usefulness of the idea to

generate new pictures and possiblities.

As Koestler and Gordon have noted, the productive thinker plays with bundles of irrelevancies, hoping they will coalesce into some inventive relevance. To the productive thinker, no observation or idea is irrelevant. On the contrary, it is often important to seek totally irrelevant distractions, for such distractions permit the pleasure of surprise discoveries.

In addition, if the right brain is to generate ideas fluently, it must be free from the domination of the left brain, and this freedom must be carefully guarded.

What conditions make it possible for the right brain to be free of critical interference? Some suggest that we can maintain this freedom if we simply concentrate on generating quantity. Certainly this can help, but let us consider also what environment it is that the right brain requires in order to function fluently.

Maybe the most important requirement is for us to relax. Tension and anxiety, which force us into time-related, sequential, analytical thinking, impair our concentration and block the awareness of intuition and the ability to play with ideas.

Picasso has observed,

> I need long idle hours of meditation. It is then that I work most. I look at flies, at flowers, at leaves and trees around me. I let my mind drift at ease, just like a boat in a current. Sooner or later it is caught by something. It gets precise. It takes shape . . . my next painting motif is decided.

His observation concurs with many others who note that creativity is not entirely volitional. The right brain cannot be forced. Instead it must be allowed. Creativity involves letting things happen, and then, in a second step, taking the responsibility for shaping the ideas generated.

Just what is going on during the period of incubation when the right brain gerates its solutions? What causes the sudden insight so common to creative thinking? The best way to explain this two-step process may be to compare creating a design to telling a joke.

In both situations the mind is connecting two planes of thought. The joke teller leads us along on one plane of thought until the punch line, when he switches suddenly to a new plane, producing a laugh. The experience in creative thinking is so similar that the discovery of a new thought often causes the person who thought it to break into laughter also. Both insight and a joke's punch line involve switching to a new plane of thought, and therefore a new arrangement of information. The incubation period is the time we give our right brain to scan from one plane of thinking to another. The sudden illumination occurs when the mind suddenly finds a way to connect two dissimilar planes.

Furthermore, according to Koestler, the greatest forms of creative thought are produced when we discover a plane that intersects the absolute with the trivial, or in other words, when the two planes are most dissimilar.

Also, since this whole process is a function of the right brain, and since the right brain thinks holistically and unconsciously, it is interesting to note that these flashes of insight we have been discussing occur in a complete form, the end result of an unconscious thought process.

What follows are some methods of encouraging this sort of intersection of ideas. I will group my suggestions under the following headings: lateral thinking, synectics, and random patterns.

The first category, lateral thinking, is a group of techniques that have been compiled by Edward de Bono in his book Lateral Thinking. Lateral thinking techniques are most useful for "breaking into" a problem, especially when we don't know where to begin, or if we seem to be locked into a dull solution. This may be the case when we are dealing with a play whose previous design has become legendary, so that we feel trapped into either doing repetitions of an earlier design or creating an inferior design.

One solution suggested by de Bono is the reversal method. The activity upsets our original way of arranging information, so that the information is free to come together in a new way. For example, some time ago, I worked on the set design for Sally Netzel's Angel and Dragon. The script called for "an artist's studio which has served up to a century of painting inhabitants." Pressed for time, I simply looked for photgraphs of Parisian artists' studios, combined elements from several of them and called that my design. Even though the finished product stasfied the requirements of both the script and the director, it was not really satisfying to me as a designer. The reason was simply that I had not allowed myself the opportunity for play, for looking at

the problem in a new way. I had read the description in the script, became locked in by it, and saw no way out, even though I wished I had.

How could the reversal method have helped me.? I might have stated the reversal in a number of ways. Instead of suggesting, as the script does, that the studio has served its painting inhabitants, I could say that the innabitats have served the studio or that the studio has disturted the innabitants. The first reversal would suggest that the artists had cared for the studio, and the resultant design might depict a well-kept space or a space lovingly tended to. The second reversal would suggest a threatening space, one that interfered with the artists' work, or with her outlook, or her social relationships. In fact, the play had this threatening quality, even though I as a designer failed to address it. Instead, my concern was merely to make the space look like a "real artist's studio."

Another technique of lateral thinking, de Bono calls it fractionation, may seem less helpful to the experienced designer than it might to the beginner. In fractionation, as in all the lateral thinking methods, the aim is to restructure the pattern that has been presented to us and generate alternatives.

In fractionation we divide a unified pattern into smaller parts. According to de Bono, the more unified a pattern is, the more difficult it is to restructure. It is easier to put a situation together in a new way if we first break the situation into fractions.

One instance that this method of solving design problems might be helpful would be when we are dealing with a play in which the script carefully describes an interior. This seems to happen most often in scripts that are printed for amateur acting

groups. The publisher, trying to be helpful, gives a page-long description of what the stage "ought" to look like. (He assumes, of course, that the play will be presented on a proscenium stage.) Then, in case the amateur designer still cannot visualize what the stage ought to look like, the publisher includes a picture of the set used in a professional production.

It is difficult to ignore such suggestions once one has read them. When one faces such a problem, fracionation may be a helpful technique. We might, for example, break the space into the sofa area, the bookcase area, and so forth. On the other hand, we might see the space in terms of characters, and divide the space by assigning divisions to individual characters, so that we might have Mary's space, for example, and the maid's space. Once we have divided the space, we can sudy the relationships between the parts, thus sidestepping the picture that seems to be imposed on us, and discovering a fresh approach.

When designing for other shows, however, we may have an opposite problem. Instead of having guidelines that are confining, we may find ourselves with very few boundaries. Therefore, part of the design process will involve setting up such guidelines for ourselves. One way to create such guidelines while at the same time avoiding the prosaic is to use Gordon's method of creative thinking, synectics.

Gordon suggests that when we face problems demanding creative solutions, we might use analogies to "make the familiar strange." He suggests the use of several kinds of analogies. One is the personal analogy. In such an analogy the designer would pretend that he himself is the environment he is studying. This enables him to discard the detachment of the expert, and to feel, instead, what the environment does, and how it acts.

Another of Gordon's suggestions, the direct analogy. simply compares one world of images with another. In a direct analogy one might compare math to biology or a box set to a worm's tunnel. It is a way to conduct widely different studies of the problem at hand.

The synectics method, however, is highly verbal, and therefore, according to our psychological model, a somewhat contradictory effort. It might be more productive to draw or to maniplate three-dimensional objects while generating the analogies.

Such externalized thinking, or thinking by manipulating, has several advantages. As suggested earlier, it helps to free the right hemisphere by providing an alternative to thinking that is locked in words and symbols. Thinking by manipulating also permits the happy accident. An object may fall into just the right place, or an unintended arrangement may catch our eye. But probably more important than all of these things is the fact that we cannot think without our senses. Conversely, it must also be true that the sensory involvement provided through the manipulation of objects must give us food for thought.

Whether we rely on verbal analogies alone, or use more visual forms, however, the synectics techniques should help us avoid the left brain pitfall of concentrating on details rather than on the larger problem. The reason we must do this is quite simple. As you have probably noted in everyday life, the scribbles of a lecturer and the gestures used in everyday speech, although they lack the details that make things "look real", communicate because they illustrate the dynamics of our thinking. Stage scenery depends not first of all on details--the turn of a Queen Anne table leg, or the fraying of the corner of an old pillow.

The heart of the design is the gestural scribble on which the details are built.

This is not to say that detailing is umimportant. What we are talking about is sequencing. If we tend first to the details, the what-has-to-be-on-the-stage-according-to-the-script, then the design will have no pulse. The scenery may be a technical marvel, but it will communicate no feeling. It will not contain the visual dynamics of thought. To incorporate such feelings, we must begin with them, or the left brain dominates, filling the space with marvelous, but unfeeling, details.

Another set of techniques that might be used to encourage right brain domination as we try to generate ideas is a category called random stimulation. The term is borrowed from Edward de Bono's book, Lateral Thinking. He suggests a few techniques that use random stimulation to help us create new ideas, but the technique is suggested by other writers as well.

When using random stimulation, one uses any information whatsoever. No matter how unrelated the input may seem, it is not rejected, because the more irrelevant a certain piece of input may seem, the more useful it may be. The reason this is true is that two ideas cannot remain separate no matter how unconnected they are, since the brain, as we noted previously, is a self-maximizing system with a limited attention span. And as Koestler has pointed out, ideas that operate on two different planes tend to intersect, creating the surprise of a new insight.

We might bring about exposure to random stimulation in a variety of ways. A very old method, one that was used by the Renaissance artist Da Vinci, is to close the eyes and lightly scribble on a paper. Then, with the eyes open, one can look for resemblances in the scribble, reinforcing and developing the

meaningful ideas with a dark mark. This is quite similar to what Irene Corey does with paint. She makes a paper wet and drips watercolors on it. On the wet paper, the colors of course run, producing unplanned patterns, and when the paper is dry, she proceeds in the manner described by Da Vinci.

Random stimulation will also occur if the designer simply goes for a walk. The particular place one walks may not be important, as long as it provides one with a large variety of different objects. A department store, a library, a museum, or the outdoors may be equally helpful.

These are only a few means of random stimulation. One might use any of a number of other methods for further generating ideas. Some people use "luminous dust," the odd patterns formed when we close our eyes in a pitch dark room, tightly squeeze our eyelids shut, and find pictures in the patterns that appear. Others look for design ideas on stain-spotted walls, or in rock or cloud formations.

These, then, are three kinds of techniques designed to help us shift into a right brain mode so that we may more freely generate fresh ideas as designers. As I noted at the outset, this paper is excerpted from a much larger paper. I have tried to avoid giving cheap recipes for doing the complex work that is required of us as designers. Rather, I hope that you will be able to see the techniques of lateral thinking, synectics, and random thinking as practical examples of how we may make use of the principles suggested by right-left brain research. The techniques need not be followed rigidly. It might further be added that the preceeding is only a collection of methods and ideas that have seemed to be the most important. Others may want to supplement these methods in order to suit their own needs.